Vegetation of the Sihl valley.

A PORTION of the Sihl valley about 8^{km} south of Lake Zürich, Switzerland, is soon to be converted into a reservoir which will have an area of about $12^{sq\ km.}$ This valley is celebrated botanically as the home of a number of rare species, and presents ecological conditions which have caused many unique features in the vegetation, particularly those which make this one of the most southern localities for a truly boreal moor-formation. As the most peculiar portions of the present vegetation will be completely destroyed and the surrounding regions consideralby modified, an important service has been rendered to science by Dr. Max Düggeli in the presentation of a complete ecological and floristic study of the present vegetation.[2] The completeness and care with which this work has been done make adequate review difficult. Among the unique features of the vegetation is the conifer forest (*Picea excelsa*) in the lowlands at an elevation which is characterized everywhere else in Switzerland by deciduous forests. The deciduous forests occur at higher levels along the valley slopes where there is better insolation, better drainage, and consequently warmer soil.

The most widespread formation in the trough of the valley is the low moor (*Flachmoor*), while in several small areas the high moor or sphagnum bog (*Hochmoor*) occurs. Many samples of peat were examined and the vegetable remains identified. These showed that no essential change has taken place in the vegetation since the last retreat of the ice, though remains of several species were found which do not now occur in the valley. Everywhere the samples showed that the low moor (Carex, Phragmites, Equisetum, Hypnum, etc.) is the pioneer, followed by the high moor (Sphagnum and its companions). The same succession was found in the horizontal series. The author considers the most important factor in determining the occurrence of low moor and high moor to be the amount of dissolved salts in the water. He contrasts these formations as follows. The low moor develops where the water comes from the earth charged with considerable mineral matter. It is flat and centripetal. The high moor on the other hand grows only in soft water nearly free from minerals, is raised at the center, and is centrifugal in development. Not until a considerable thickness of peat has accumulated can the sphagnum get a start in the low moor. To test his hypothesis that the mineral content of the water conditions the occurrence of the high moor, he staked out squares of sphagnum 30^{cm} on a side, and watered daily with a liter of water containing minerals. Sphagnum watered thus with water from the Sihl river was killed in eleven days. Solutions of KNO_3, Na_3PO_4, $MgCO_3$, $CaCO_3$, etc., gave a similar result. His solutions do not appear to have been made up on a very scientific basis, and he makes no mention of a control in which sphagnum is similarly treated with a mineral-free water, but the results are suggestive.

[2] DUGGELI, MAX, Pflanzengeographische und wirtschaftliche Monographie des Sihltales bei Einsiedeln, von Roblesen bis Studen (Gebiet des projektierten Sihlsees). 8vo. pp. 222. *pls. 4. figs. 10.* Zürich: Zürcher & Furrer. 1903.

The numerous types of meadows are treated in an interesting manner. Besides giving a complete description of each type with its various modifications, he contrasts meadows differing only in the direction of the slope, and others differing only in the character of the soil, thus showing the great ecological significance of these factors.

There are many commendable features about the work which will make it a suggestive model for future studies of similar small areas, not the least important of these being the lucid literary style.—G. H. SHULL.

NOTES FOR STUDENTS.

SHIBATA[1] proposes to designate as *amidases* certain enzymes found in the mycelium of *Aspergillus niger*, which spilt off ammonia from urea, biuret, and certain acid amides. They have nothing in common with the proteolytic enzymes. —C. R. B.

CHARLOTTE TERNETZ[2] finds in peat and peaty soils at least one fungus which is capable of fixing free N from the air. The fungus has a much branched septate mycelium and forms brown pycnidia which contain very small hyaline spores. It acts less energetically but more economically than *Clostridium Pasteurianum*.—C. R. B.

LIGNIER,[3] in an interesting comparison of the structures of Equisetales and Sphenophyllales, and of both with the structures of other pteridophytes, reaches the conclusion that these two groups, although differing in certain important particulars, really form one group, for which he proposes the name "Articulées." He further concludes that all the "Articulées" have a common ancestry, which was probably the most ancient Filicineae.—J. M. C.

LIGNIER[4] has discussed the nature of the so-called "flowers" of Gnetales in relation to similarly named structures in other gymnosperms and in angiosperms. He concludes that the staminate "flower" of Gnetales is a simple flower, and does not differ essentially from the much reduced flower of angiosperms; but that the ovulate "flower" is a very complex structure, really representing an inflorescence excessively reduced and condensed, and therefore could not be considered as a stage between the other gymnosperms and the angiosperms.—J. M. C.

IKENO, in reviewing and discussing the literature of the blepharoplast,[5]

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[1] SHIBATA, K., Über das Vorkommen von Amidespaltenden Enzymen bei Pilzen. Zeits. Ges. Biochemie **5**:384–394. 1904.

[2] TERNETZ, CHARLOTTE, Assimilation des atmosphärischen Stickstoffs durch ein torfbewohnenden Pilz. Ber. Deutsch. Bot. Gesells. **22**:267–274. 1904.

[3] LIGNIER, O., Equisétales et Sphénophyllales. Leur origine filicinéenne commune. Bull. Soc. Linn. Normandie V. **7**:93–137. 1903.

[4] LIGNIER, O., La fleur des Gnétacées est-elle intermédiaire entre celle des gymnospermes et celle des angiospermes? Bull. Soc. Linn. Normandie V. **7**:55–71. 1903.

[5] IKENO, S., Blepharoplasten im Pflanzenreich. Biol. Centrabl. **24**:211–221. *figs.* 3. 1904.